

## TECHNOLOGY AND TOURISM SAFETY: A CRITICAL INSIGHT OF GOVERNMENT INITIATIVES AND EMPIRICAL LITERATURE ANALYSIS

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### ABSTRACT

*The study provides an insightful analysis of government technological initiatives in tourism and hospitality sector through the lens of the Protection Motivation and Dynamic Capability theories. This study draws on a two-stage data source review of literature. The results showed that Ghana has made countless efforts in providing technological supports for tourism businesses: increase e-services (online booking, e-compliant, e-taxi, e-ticket, chatbots) in the sector, and the deployment of fire alarms, smart room keys and fingerprint recognition, surveillance cameras in protecting tourists at destinations. However, the results also identified some constraints associated with technology applications including: non-affordability of the needed technologies, limited technological skills of end-users (tourists) and inadequate legal support. This study has made a contribution in filling a knowledge gap in tourism literature regarding the role of technology and safety in improving business outcomes in the tourism sector, a phenomenon which has been understudied.*

**KEYWORDS:** technology, tourism safety, e-services, destination safety, government initiatives, tourism

### 1.0 INTRODUCTION

In our contemporary 21st century world, tourism and hospitality (T&H) (scenarios/affairs) are progressively molded by technology. Extant studies within the sector have focused and highlighted on technological supports in tourists' safety and security (Preko, 2021); technology strategies for tourism planning (Gore *et al.*, 2021); technology and Generation Z's perceptions (Sfodera *et al.*, 2022); future of technology integration (Tlili *et al.*, 2021; Kitsios and Kamariotou, 2021); Artificial Intelligence (IA); and robotics in tourism (Samala *et al.*, 2022); and mobile booking (Mohamad *et al.*, 2021). Despite the plethora of studies in technology and tourism safety, limited recognition is given to synthesizing government initiatives and empirical articles on how the T&H sector utilizes technology applications in promoting tourism safety. Indeed, some scholars have examined the varied gains of technology in this sector. But further investigation is needed to understand Ghana's journey and efforts in technology applications in the sector. This study considered tourism safety to connote safety at destination sites and safety in accessing e-services (e.g., e-payment, e-booking, e-ticketing etc.) by tourists devoid of risk, cybercrime, fraud and victimization. Furthering, safety at destinations is operationalized as safety measures at sites such as installation of surveillance cameras, fire alarm, *gadgets* to screen tourists and vehicles prior to entering the sites, metal *detectors* and bomb *detection* devices utilization within the T&H sector. The current study aims at addressing a contextual-knowledge gap by providing an insightful analysis into government technological initiatives for assuring and promoting tourism safety in the T&H sector. We used the following specific objectives to guide this research:

- a) To explore the nature of technology adoption and safety in Ghana's T&H sector;
- b) To assess how technology initiatives (policies, regulations, strategies) have impacted stakeholder behaviour regarding the promotion of safety in the T&H sector;
- c) To explore the role of technology in promoting tourism safety;
- d) To identify the main safety constraints associated with the use of technology in the tourism sector.

Importantly, technology applications have offered many gains to the tourism sector in the way tourists travel, book hotels online, purchase electronic tickets, access online taxi services, update websites, grievances redress system for accepting complaints and addressing issues, among others.

Clearly, it is shown that the T&H sector which is regarded as a service sector has no other choice than to embrace technology in its operations. An interesting example is that tourism and hospitality websites have now topped traditional word-of-mouth marketing; as the prime source to inspire and guide tourists in their travel plans and choices. The trend has now become the modus operandi by which tourists now easily find and book their destinations via any device, be it a smartphone or personal computers. According to the World Tourism Alliance (WTA, 2022) reports, new technologies applications such as 5G, AI, robotic, big data, and space technologies are driving innovation in the tourism sector. Thus, enriching visitor experience; reducing costs; boosting economies of scale; improving service efficiency; strengthening tourism infrastructure, targeting specific customer groups, and amplifying marketing effects. This signifies that technology has brought significant changes to the demand, supply and growth of the sector. In the industry, technology applications utilization includes contactless payment platforms used by tourists in paying for bills (e.g., visa or master cards, mobile money etc.), Wi-Fi, mobile apps, robots and infrared sensors, cloud services, chatbots, among others. In this study, technology is interchangeably used as a digital or technology application used to promote the industry in context. Significantly, this study is of value to policy-makers, T&H businesses, practitioners, and tourists in and around the world.

Categorically, we have contributed to the extant literature in three ways. One, our study is among the few studies on the African continent that has attempted to extend the understanding of leveraging technology in promoting excellent e-services to tourists, given the growing relevance of the sector. This new insight has supported UNWTO (2003) agenda for countries to formulate a state policy that will protect and safeguard tourists against risks, crime, terrorism, food safety and hygiene related matters. Two, our findings have responded to calls to support WTA (2022) agenda on technology applications in tourism services. This is evidenced in how the Ghanaian T&H sector uses technological applications (Internet or WI-FI) in providing e-services such as online traveling sites, e-booking, e-transactions, e-tickets, online taxi services, fingerprint recognition, smart room keys, artificial intelligence (chatbots services, marketing decision support, forecasting short time-series tourism demand), and others. This provides insights into how technology can strategically manage tourism safety. Three, we have made a contextual contribution by synthesizing government initiatives and empirical literature to fill a knowledge gap in tourism literature which has been an understudied field in tourism studies. The study is constructed into three sections. Section one includes the introduction and the literature review, while in the section two we explain the methods used for the study. The last section deals with the discussion of results, conclusion, implications and future research directions.

## **2.0 THEORETICAL UNDERPINNING**

### **2.1 Protection Motivation Theory**

The Protection Motivation Theory (PMT) is a vital theory used to explain the motives for individuals to adopt protective behaviors (Rogers, 1975; 1983). This theory evolved from the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and posits that an individual's decision to adopt protective behavior is influenced by perceived threats, which further lead to the development of coping appraisals. The theory's major arguments are that threats are evaluated through perceived vulnerability and risk susceptibility. Coping mechanisms are then developed from self-efficacy, response efficacy and response costs linked with safe or adaptive behaviors. In our study, the PMT is used to explain the role of protective measures in ensuring tourist safety when using online booking, payment or service platforms, whilst also ensuring that destination sites have basic security protocols to ensure tourist safety and reduce or minimize vulnerability and physical security risks.

The PMT theory is adopted in this study because it facilitates a clearer understanding of the role of security protocols in ensuring data security, privacy and also physical protection from harm. Thus, applying this theory to the present study on technology and tourism safety helps in expanding knowledge on how tourism stakeholders and institutions implement security protocols as a means of reducing perceived vulnerability and perceived risks to ensure that tourist feel safe when using

Andoh, A. J., Ayiku, A & Kodie, P., *Journal of Business and Professional Studies Vol. 15, No.1, 2024* digital or technological resources and infrastructure at destinations or at any hospitality institution in a country. Furthermore, this theory helps to highlight how technology such as fire alarms, security cameras, and security doors can help to offer a sense of security to tourists using tourism and hospitality facilities. Essentially, the theory provides a framework within which to argue that the potential of perceived risks and vulnerability to cyber-attacks necessitates the adoption of preventive and protective actions which are coping mechanisms from various tourism and hospitality stakeholders.

## **2.2 Dynamic Capabilities Theory**

The Dynamic Capabilities Theory is the second theory adopted in this study. This theory posits that firms seeking sustainable competitive advantage need to configure their resources into dynamic capabilities that respond to emerging opportunities and threats from the firm's environment (Cavusgil et al., 2007; Teece, 2018). The theory further postulates the development of internal firm competencies such as adaptive capabilities and innovative capabilities (Van de Watering et al., 2017; Reinhardt et al., 2018). In this study, the role of technology and safety in tourism can be explained further using the dynamic capabilities theory. The protection motivation theory has been used already to highlight the presence of risk factors and perceived threats which make tourists and hospitality firms vulnerable to digital and physical attacks. The dynamic capabilities theory is adopted to augment this argument and further advance the need for tourism destinations and hospitality organizations to develop adaptive and innovative capabilities to combat the security threats that may arise.

Adaptive capabilities within the tourism and hospitality sector pertain to the development of competency in managing security systems such as CCTV cameras, fire and smoke detection systems, threat alarms and other security protocols that ensure that tourists are safe and protected. Furthermore, pertaining to the technological and online aspect of tourism service delivery, adaptive capabilities of T & H firms include developing online security systems for customer data protection and prevention of cyber-attacks and fraud. Clearly, the threats posed by digital and physical entities to tourists require firms in the T & H sector to develop adaptive and innovative capabilities to ensure tourist safety. Thus, the PMT and dynamic capabilities theory are used to explain the nature of threats posed to tourists and the capabilities required to prevent and manage these threats in the event they occur. Using these two theories simultaneously in this study provides deeper perspective on how technology presents risks and opportunities which require the development of adaptive and innovative capabilities to provide coping mechanisms for T & H firms.

## **3.0 LITERATURE REVIEW**

### **3.1 Contextual Background of Tourism in Ghana**

The World Travel and Tourism Council (WTTC, 2015) states that Ghana's tourism industry is crucial to the socioeconomic development of the country. Unceasingly, tourism has been a pivotal tool in strengthening both the economy and poverty alleviation. The Launch of the "Year of Return and Beyond the Return" in 2019 revealed that Ghana's economy could receive a significant boost through tourism (Gebauer & Umscheid, 2021). Interestingly, the contribution of tourists' receipts to the Ghanaian economy was expected to increase from \$1.5 billion in 2017 to \$2.5 billion in 2022, and projected to \$4.3 billion by 2027 (International Labour Organization (ILO), 2020). Additionally, the contribution of foreign exchange to the Gross Domestic Product (GDP) is expected to increase from 5.0% in 2017 to 5.2% in 2022 to 5.7% by 2027 (International Labour Organization (ILO), 2020). Within context, technology has been applied in explaining and enhancing tourism to some extent (Preko *et al.*, 2022). However, leveraging technology to promote tourism safety requires a critical review of literature and government initiatives. Hence, the contextual application of technology and safety might be important in enhancing tourism in Ghana.

### **3.2 Technology and Tourism Safety**

The associations between technology and tourism are documented in a formative way based on technological involvement in tourism development. Related to earlier studies (Akaka and Vargo,

Andoh, A. J., Ayiku, A & Kodie, P., *Journal of Business and Professional Studies* Vol. 15, No.1, 2024 (2014; Vargo and Lusch, 2008), technology is considered as an operant resource that serves as a platform for promoting tourism development (Ali and Frew, 2014; Çiftçi and Çizel, 2020). Garg's (2015) research has shown the relevance of safety, peace and stability as major worries for tourists when selecting a destination for a vacation. Though the concept of technology has drawn a wider attention in tourism literature, research that reflects government initiatives on technology insight analysis is still limited. In this research, we consider technology as a podium that enhances or facilitates tourism directly or indirectly.

Perhaps the most crucial factor in determining a destination's magnetism, and thus generating and sustaining interest in a destination, is safety (Boakye, 2010; Mohammed *et al.*, 2021). Therefore, every destination tries to portray itself as a safe place. The term "safety" relates to people's emotional reactions to how well their physical and psychological requirements are met in their surroundings (Zou and Meng, 2020). Reflecting on the study of Michelberger and Labodi (2012), one can cite one of the simplest definitions of safety as the minimising risk factors to protect tourists from injury or death their destination. Their definition implies that safety at destinations can be minimal as safety is regarded as a primary factor in tourist decision making when thinking of traveling for tourism purposes.

A study by Preko (2021) on safety and security at the beach in Ghana indicated the relevance of using closed-circuit television (CCTV) cameras at the beach to protect the tourists from unforeseen circumstance. Similarly, the findings of Kotoua and Ilkan (2017a) posited the importance of tourism websites to tourists community when browsing for tourism information about a destination and also the websites help the T&H businesses to market their products and services to their customers (tourists). Further, technology has provided tourist with avenue to determine how safe and reliable a destination might be in terms of terrorism events and threats. Similarly, the findings of Kotoua and Ilkan (2017a) on tourism destination marketing and information technology in Ghana posited the importance of tourism websites to the tourists community when browsing for tourism information. Meanwhile, the websites also help the T&H businesses to market their products and services to tourists. Their study further revealed that online word of mouth and information search by tourists are significant predictors of intention to visit a tourism destination. Once more, prior literature in the Ghanaian context has attested the significant contributions of online destination image, online word-of-mouth, online security vulnerability to tourist satisfaction in a mediation analysis (Kotoua and Iikan, 2017b).

Contextually, other studies that investigated destination safety and technology applications in the Ghanaian T&H sector (ICT and tourism promotion (see: Ayeh, 2008; Boakye, 2010; Poku and Boakye, 2019; Akyeramfo-Sam and Nti, 2017) acknowledged the nexus between these variables and their roles in developing the Ghanaian tourism sector of a developing country perspective. Further, safety issues pertaining to accommodation, and destination threats in relation to crime have also been advanced through technology. Interestingly, technology was found as a panacea for promoting tourist safety especially during the COVID-19 pandemic (Foris *et al.*, 2022). This study conceptualized safety as the extent to which e-services provided by the destinations are secure, and also how the physical environment of destinations are free from terrorism threats, crime, cybercrime, and others. This implies that safety in this paper connotes two ideas, that is, safety in the technological services that they use, and risk-free tourism destinations.

## **4.0 METHODOLOGY**

### **4.1 Search for Materials**

This study adopted the SPAR-4-SLR protocol recommended by Paul *et al.* (2021). This facilitated three core processes including: assembling, arranging, and assessing literature on tourism and security over a seven (7) year period spanning from 2016 to 2022. Thus, the first activity conducted in this reviewing was assembling articles pertaining to the areas of social influence and sustainable consumption. The review specifically sought to explore the nexus between these two concepts. To achieve the stated objectives, a two-stage data source review of specific government initiatives and published articles. In stage one, we conducted a Google search by using Boolean Operator "AND"

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“OR” “NOT” in tracking “Ghana government initiatives and tourism” and “technology initiatives and/not tourism in Ghana” separately into the search box. We collected secondary data comprising of some national tourism documents which are: National Tourism Development Plan (NTDP) 2013-2027 and Sector Skills Strategy for Tourism and Hospitality Sector and other legislative instruments such as Data Protection Act (Act, 843 of 2012) and Electronic Transaction Act (Act, 772 of 2008). Softcopies of online documents that address the issues of technology related and tourism as the inclusion criteria were collected on PDF format.

Further, data was gathered in stage 2 to address the limitations in phase 1 and to meet objectives two and three that focused on the technology initiatives and challenges associated with tourism safety and technology. In stage two, we used the Google search to find 31 relevant articles that linked technology and tourism safety published with these academic publishers. These publishers include Elsevier, Sage, Emerald Insight, Taylor and Francis, and Inderscience. We used these academic sites due to their global recognitions, importance and focus on the topic under investigation. Again, these sites are recognised and listed among high quality peer-reviewed journal articles publishers for academic community and industry professionals on the globe. Finally, the articles reviewed were published between 2016 to 2022 signifying that current literature were used for this study.

#### **4.2 Data Extraction**

Furthermore, we used these steps for the data extraction and context analysis for both data sources. First, the downloaded materials were uploaded into Nvivo software and we used the “text search” function of the “explore” option to search using these keywords “e-service”, “technology”, “electronic”, “digital”, “ICT” and “tourism safety”. Second, the researchers used a systematic approach by independently reading all the documents to guarantee familiarity of the keywords used and its applications. Third, we grouped the key technologies that the T&H sector leverage for their services into e-services and technological infrastructure (gadgets) deploy at destinations to guarantee tourism safety.

Notably, we have presented evidence of technology and/or safety contents and extracts of the government initiatives documents used in Table 1. For example, the NTDP document revealed the application of technology and tourism safety together, while the T&H Sector Skill Strategy document details specific areas where the technological service should be deployed. This includes online booking of accommodation, e-transport (e-taxi services), e-transactions, CCTV, e-safety signs at destination, e-complaints services, etc., signifying the significant connectivity between technology and tourism safety in context.

Technology and tourism were considered for this study, for some reasons. First, Ghana has launched “A Safer Digital Ghana, 2018” and “Demonstrating Ghana’s Cyber Security Readiness, 2019” as part of National Cyber Security Awareness Month (EU Cyber Direct, 2018) to promote admirable safety in public services which the T&H sector is part of. Second, Ghana has engaged in wide-ranging e-transform projects such as National Biometric Identification Card (Ghana Card), Digital Property Address System (Ghana Post GPS), emerging the Ghana Card (ID) with the database of the Criminal Investigation Unit of Ghana Police Service, e-payment platforms (FinTech: mobile money transactions, Ghana Quick Respond (QR), Zeepay and others) which backed by Cybersecurity Act, 2020 (Act 1038).

#### **5.0 FINDINGS AND DISCUSSION**

This study examined Ghana’s technological initiatives in promoting tourism safety through technological applications in the tourism and hospitality sector through the lens of the Protection Motivation Theory and the Dynamic Capability Theory. The results of this study indicate that stakeholders in Ghana’s tourism and hospitality sector have recognised the threats inherent in technology usage in the sector, and have responded by developing adaptive capabilities evidenced through policy and legal support to curb the threats that users of these technology are exposed to.

The study found first of all that the nature of technological innovation geared towards safety in the T & H sector comprises of the introduction of surveillance cameras, fire alarms and other security alarm systems in protecting tourists at destinations. These are the core technological infrastructure that the country has set up to combat threats posed to tourists. The adoption of the technological devices instils a sense of confidence in tourists visiting various destinations in Ghana. This study found that hotels, guest houses, restaurants and other hospitality organisations have adopted these security systems in order to enhance guest/visitor experience, particularly in relation to security. Furthermore, in terms of e-services, the study's findings reveal that e-services like online booking, e-compliant services, e-taxi, e-ticket, tourist checkout hotel photos, artificial intelligence (chatbots services) are accessible and available to tourists in Ghana. This is a relevant finding as it confirms the adoption of technology in the tourism and hospitality sector in Ghana. It further highlights the effects of a conducive policy and legal framework geared towards maximising technology adoption in the sector. This finding is regarded as one of the original contributions of this study compared to earlier studies on technology and tourism.

Our findings validate the findings of Mills et al. (2010) who found that biometric technologies were being adopted in the hospitality sector to beef up security and protect client data. Their study, like ours highlights data protection and privacy as an important aspect of technology usage in the hospitality sector. Also, this study's findings corroborate the findings from Khatri et al. (2019) that highlight a decade worth of research indicating the extent of technology usage in the tourism and hospitality sector, and its security implications. Even though Willie (2019) found that technology such as block chain was being adopted in the hospitality sector, our findings reveal that this is not a widespread phenomenon in Ghana, and could be an emerging area still requiring further policy and institutional strategy and implementation. Nonetheless, our findings contribute to the literature by identifying the teething problems hospitality and tourism sectors in emerging countries like Ghana face when dealing with issues of technology adoption and security.

Theoretically, the use of the Protection Motivation Theory advances knowledge in the area of technology use and security in tourism by delineating how protective mechanisms in technology use are vital to protect user data and information and also facilitate risk coping among organisations and individuals. Further, our study used the Dynamic Capabilities Theory to emphasize the importance of adaptive capacity among stakeholders in the tourism sector in order to understand the security implications of technology usage in the tourism and hospitality sector, and develop effective coping strategies to safeguard stakeholder data and privacy. Adopting these two theoretical perspectives has provided further depth to the literature on technology usage in the tourism and hospitality sector by highlighting how risk triggers and perceptions result in coping mechanisms which are adaptive capabilities.

Importantly, the findings of our study confirm prior research (Preko & Anyigba, 2022; Preko *et al.*, 2022; Akyeramfo-Sam and Nti, 2017) on how the Ghanaian T&H sector is responding to the international best practices in terms of technologies applications to support e-services. This is an important contribution as it explicates the role technology usage plays in boosting the profitability of the tourism and hospitality sector. On the other hand, in the contemporary business environment, e-services have advantages in increasing services to customers, enhancing organizational image, and serving as a competitive edge for businesses survival. Our study therefore provides evidence on the relevance of technology usage in tourism and hospitality, and how safety and security contributes to increased stakeholder confidence, especially among foreign tourists.

This study also found that although, the T&H sector strives hard to leverage technological applications, the safety of the e-services in terms of how secured and reliable they are, present one of the biggest challenges as the e-services are linked to cybercrime and fraud. This is an area where the literature on tourism and safety has been surprisingly silent. Past studies have not addressed the issue of cybercrime and its effect on technology use in the tourism and hospitality sector. Using the Ghanaian context as an example, this study found that mobile money fraud associated with e-

*Andoh, A. J., Ayiku, A & Kodie, P., Journal of Business and Professional Studies Vol. 15, No.1, 2024* payment platforms represents a barrier to the growth of technology use in tourism and hospitality. Nonetheless, this study provides clarity by identifying the regulatory interventions that have been put in place to enhance security and reduce risk of mobile payment fraud and cybercrime. According to Eboibi (2020), Ghana has incurred a cumulative total of \$299.9 million in domestic economic losses due to cybercrime between 2016 and 2018. This situation has led to the directives of compulsorily showing personal IDs (Ghana Card) before withdrawing mobile money at all electronic money transaction centres.

The results from this study highlight Ghana's countless efforts in providing technological support for businesses to operate in all sectors including the tourism sector. Specifically, the country has launched the "Ghana Digital Economy Diagnostic" initiatives that detail a rapid digital transformation in the entire economy that is changing the way businesses operate, trade and how customers can access public and private services and information (World Bank, 2020). Past studies have not provide such clarity and practical examples of government initiatives to drive and promote technology usage and security in tourism and hospitality. This makes the findings of this study unique as it provides practical examples that enrich the literature and can be used as a case study for advancing knowledge and teaching in this field.

The results of this study also reveal the legal and regulatory frameworks underpinning technology and security issues in tourism and hospitality. This study has found that to boost the growth potential and increase profitability within the tourism sector, the country has accepted diverse technology adoption measures that are reinforced by legislation like Electronic Transaction Act (Act, 772 of 2008), National Information Technology Agency Act (Act 771 of 2008), Data Protection Act (Act, 843 of 2012), and Cybersecurity Act, 2020 (Act 1038) to protect, safeguard and deliver excellence services to customers in all sectors of the economy. The introduction of these legislations have showcased Ghana's commitment to the deployment of technology in every sector of the economy. Unquestionably, every sector including the T&H sector relies on the Internet as one of the technological platforms to serve tourists to access the relevant information during their vacations or trips to their destinations. The record shows that in August 1995, Ghana among the became the first West African country to have a permanent and full Internet connectivity on the continent (Hegener, 1996). According to the report of Digital Ghana (2022), Ghana has 53% of Internet users of the total population of 32 million in 2022.

Added to this, our findings have thrown light on other legislative instruments implemented by the government of Ghana to safeguard and promote safe e-transactions (payment platform technologies, and trade and investment technologies) among customers and businesses. These initiatives consist of the National Digital Property Addressing System and the Re-registration of SIM cards. Other initiatives also include Ghana Interbank Payments and Settlement Systems (GhIPSS) and the universal QR code system, the first to be launched in Africa, to support instant payments from their mobile money wallets, bank accounts, or international cards for business and personal transactions. For example, the re-registration of SIM cards was introduced to bring about a single database that is linked to the national identification card. This will then support verification and confirmation of individuals' details that will lessen cybercrime and fraud and increase the usage of e-services in context. Again, one other leading example is the National Cyber Security Awareness Month launch known as "A safer Digital Ghana, 2018". This awareness agenda complements the policy fight against cybercrime and victimization, thus building individuals' confidence in using technologies. Correspondingly, an empirical review of Preko and Hod (2022) for this current research on the "tourism and hospitality career progression pathway" also revealed a high demand for technology supported occupations such as website designers, digital marketers, and data analysts in the Ghanaian T&H sector. All the results of our study demonstrated the significant role of government initiatives in promoting e-tourism, that is digitisation of all the processes and value chains in the T&H industry.

Evidently, our findings on the main constraints associated with the nexus between technology and tourism in the sector revealed that these two terms are intertwined. According to Leung and Law

*Andoh, A. J., Ayiku, A & Kodie, P., Journal of Business and Professional Studies Vol. 15, No.1, 2024* (2015), there is a direct nexus between technology and tourism, where tourism is affected by technology. Clearly, technology has become a strong driving force that has changed the face of tourism through the creation of new products or services, communication channels, business practices and business models. Early research (Benckendorff *et al.*, 2014) also emphasized that technology is the backbone of tourism development, as it enables the T&H sector to search for meaningful and profitable niche markets, increasing revenue and enhancing customer experience. Effectively, technology remains an indispensable catalyst for global marketing of the T&H sector.

Based on the extracted documents and empirical studies reviewed, the main challenges associated with technology applications emerged as hindering e-service as well as e-tourism growth. We herewith identify the following constraints, among others. The first set of constraints is considered as technology access-related issues, which include over-reliance on technology, the uncertainty of some technologies, and non-affordability of the needed technologies due to the low purchasing power of T&H institutions to purchase modern technology. The second challenge is associated with the limited technical skills of end-users (tourists) due to poor awareness creation that ought to be initiated by state institutions in-charge of the sector. The third constraint is inadequate legal support, compliance, observing risks protocol, and managing data privacy by the institutions in-charge of the promotion of e-transactions and e-payment. This was confirmed in the study by Akomea-Frimpong *et al.* (2019) who found/observed that weak internal controls and systems, lack of sophisticated information technology tools to detect the menace. Besides, their study found inadequate education and training, and the poor remuneration of employees of mobile money operators and mobile money agents affect e-transactions.

## **6.0 CONCLUSION**

To conclude, we showed that Ghana is dedicated to strengthening the applications of technologies in the Ghanaian T&H sector to support the WTA (2022) agenda on technology in the tourism space on the globe as well as guaranteeing safe destinations in context. This is showcased in the diverse legislative instruments (e.g., Cybersecurity Act, 2020 (Act 1038), Data Protection Act (Act, 843 of 2012), and others initiated by the state to protect consumers of e-service. Our study makes the first attempt to contribute to filling the knowledge gap in the T&H literature by synthesizing state documents and empirical articles that offer an all-inclusive overview of how a nation like Ghana continually leverages technology to promote tourism safety. For example, the enforcement of the new registration of sim-cards with the Ghana Card as the single national ID to be used for all financial transactions beginning from 1 July 2022 (Bank of Ghana, 2022), provides confidence in the usage of e-transactions in context, which equally benefit the tourism sector.

Additionally, our findings have gone beyond the earlier research (Kotoua & Ilkan, 2017a; Kotoua & Ilkan, 2017b) to expand the frontiers of technology-tourism literature. Firstly, while the study of Kotoua and Ilkan (2017a) found online security vulnerability as a significant mediator of the relationship between online destination image and tourists' satisfaction within the Ghanaian tourism context, our findings revealed the availability of online booking, e-compliant services, e-taxi, e-ticket, tourist checkout hotel photos, artificial intelligence (chatbots services) to tourists in Ghana. These technological resources provide tourists with secure options that enhance their tourism experience. Furthermore, the availability of these services elevate the tourism sector in Ghana to global standards given that presently, most countries with high tourist influx have robust digital tourism systems from ride hailing applications, online hotel and accommodation booking, e-taxi and other tourist related services (Pancarelli, 2020; Hossain *et al.*, 2022; Nguyen & Ha, 2022). Our findings confirm that Ghana has taken strides to integrate these services in the tourism sector for competitive advantage.

This study's findings are also distinct from the prior research by Preko (2020), which findings underscored how the government of Ghana is committed to the promotion of tourism through job creation opportunities, cyber-attack examination, innovation, and using music and festivals to promote tourism in context. In this study, we highlighted the legislative initiatives introduced by



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the government of Ghana to safeguard and promote safety e-transactions and the constraints associated with the nexus between technology and tourism in the sector, which have been overlooked in earlier tourism literature in context, our findings suggested that Ghana is on course to developing a robust technological environment, which will position and market the country's T&H sector among other tourism destinations in the world. Admittedly, this research may be fraught with some inherent conceptual limitations that could impact on the generalization of its findings due to the lack of empirical testing of the key variables used in context. Further, studies can also empirically test the impact of these government initiatives on the growth of T&H sector in Ghana.

## **7.0 IMPLICATIONS AND RECOMMENDATIONS FOR POLICY AND PRACTICE**

Our findings have some policy and managerial implications for major stakeholders in the sector. First, stakeholders such as the Ministry of Tourism, Arts and Culture of Ghana, Ghana Tourism Authority, and allied agencies like the Ghana Tourism Federation (GHATOF) need to develop innovative and supportive policies that can support and promote technological innovation in Ghana's tourism and hospitality sector. These state agencies need to encourage local technology adoption across every level of the tourism value chain, including the development of mobile applications for guided tours, market visits, heritage tourism, and other relevant tourist-centred services. Formulating policies that support and promote technology adoption in this sector can be crucial to accelerating the degree of technological adoption which enhances tourist experience. This recommendation is predicated on the need to match up with global standards in tourism, which has seen a considerable rise in technology adoption especially over the past decade.

Secondly, the institutions mentioned above including the Bank of Ghana (BoG), Ministry of Information, Ministry of Interior, Judiciary and Fintech institutions need to recognise the unique potential in Ghana's tourism sector that has opened up since the launch of the Year of Return 2019 campaign and the Beyond the Return campaigns. In view of this, we recommend that these institutions engage other stakeholders in the tourism and hospitality sector such as the various unions and their members to deliberate on service touchpoints and areas that require additional support in policy implementation in facilitating technology adoption in the sector, and also combating technology-associated crimes and frauds. This collaborative engagement will ensure stakeholder salience which is vital in the mission to safeguard the image of Ghana as a digitally innovative and technologically secure destination among tourism destinations on the globe. Additionally, a strategic approach to technology acceptance (e.g., e-transaction and e-payment) by T&H businesses and institutions should be embraced and promoted by the government of Ghana through the BoG that oversees e-finance in the country. The fintech space is vital to ensure that tourists from various parts of the world are able to access their funds securely to pay for tourism experiences without stress or duress. This is key in enhancing Ghana's image with regards to technological savviness. The Bank of Ghana and its agencies and partners need to develop tourism specific policies that promote digital innovation and seamless payment options for tourists visiting Ghana.

Another important recommendation we offer to the government and other development partners such as WTO, and the International Labour Organization is to offer financial and technological assistance to T&H businesses to facilitate adoption and implementation of digital technology. One of the challenges or obstacles our study identified with regards to technology use and safety in the Ghanaian context is the lack of technical and financial support for stakeholders at the bottom of the pyramid in the tourism and hospitality sector. This is an area where government and tourism partners need to invest in to create an ecosystem that supports technology adoption and capacity building. For example, the taxi system in Ghana could benefit for investments in metered taxis and digital access services so that tourists can easily access local taxis. Such a technology can revolutionize the taxi system in Ghana, and can even be applied to local busses popularly known as "trotros". In relation to this, we also propose that government makes financial commitments to

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facilitate the affordability of the technologies, as well as encourage the development of locally tailored technology applications for the sector.

We further recommend that the government of Ghana oversee the efficient and effective implementation of legislative instruments that support and promote the data privacy of tourists. Government support and advocacy is vital in ensuring that the required legal instruments are passed to support technological innovation, safety and security. It is also recommended that T&H managers and practitioners invest in technology innovation and orientation for staff. Firstly, managers in the various hospitality institutions need to identify areas of service delivery that can benefit from technology use, especially with regards to booking, confirmation and payment. This is vital in ensuring a seamless purchase and post-purchase experience for tourists and local tourism consumers. Additionally, managers need to invest in staff training and orientation on best practices in managing technology to deliver excellent services to customers. Staff at the front end and back end need to be trained on how to ensure security of tourist data especially during payments. This implies that management and employees of the sector should comply with the BoG's directive, whereby the Ghana Card for Ghanaians and foreign nationals with valid passports are considered as the only acceptable national IDs required for all financial transactions in the country. Implementing these recommendations will boost tourism safety and appeal to tourists.

Essentially, the recommendations we have proffered will aid tourism policy makers and practitioners to stimulate change and transformation within the tourism space with regards to technology and security in mobile and other digital service systems in the tourism sector. Our findings will therefore help in the management of tourism safety in Ghana and the development of a technologically innovative, robust and secure tourism industry.

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